



OSI
SPECIALTIES

**Silicone Fluids,
Emulsions and
Foam Control Agents
for Your
Application**

HOUSEHOLD, AUTOMOTIVE AND INSTITUTIONAL - continued

Application	Recommended products, listed in order:
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General purpose cleaners - continued:

Antistats (to reduce static charge build-up in carpet treatment applications)	Silwet L-7604 / Silwet L-7600 / Silwet L-7644 / Silwet L-7200 / Silwet L-7602
Control foam in industrial cleaning solutions, rug shampoos, detergents, spray starches and fountain solutions	Sag 2001 / Sag 30
Control foam in household and commercial carpet shampoo machines	Sag 2001 / Sag 1000

Polishes:

Imparts excellent water repellency and wetting properties in polish formulations	<i>Aqueous:</i>	LE-323 / LE-458HS / LE-461HS / LE-462MW
	<i>Non-aqueous:</i>	L-45 (50-60,000 cSt)
Active ingredient in polish formulations such as car and furniture	<i>Aqueous:</i>	LE-323 / LE-458HS / LE-461HS / LE-462MW
	<i>Non-aqueous:</i>	L-45 (50-60,000 cSt)
Provides good "rub-out" in polishes	<i>Aqueous:</i>	LE-323 / LE-458HS / LE-461HS / LE-462MW
	<i>Non-aqueous:</i>	L-45 (50-60,000 cSt)
Control foam in floor polishes	Sag 2001 / Sag 710	

PRINTING AND PAPER

OSi Specialties products are used extensively in the manufacture and printing of paper. Several products comply with FDA regulations for use in the manufacture of paper and paperboard products that are used to package food.

▼ **Dimethyl Silicone Fluids and Emulsions**

serve as lubricants, release agents and sizing agents. They prevent the paper from sticking to dryers and rollers during manufacture, and impart a high degree of water resistance to paper See Pages 21, 26

▼ **Silwet® Surfactants**

facilitate pigment dispersion, allow recoatability and improve flow and leveling during printing See Page 28

▼ **Specialty Fluids and Emulsions**

serve as lubricants, release agents and sizing agents. Recoatable See Page 35

PRINTING AND PAPER - continued

Application	Recommended products, listed in order:
<i>Release agent used in:</i>	
Food packaging paper and for direct contact with food. Complies with FDA regulation 21 CFR 176.170 and 176.180	L-45(350 cSt) FG
Reprographic paper	L-45 (100 cSt)
Paper	LE-410 / Silwet L-7602 / Silwet L-7200 / Silwet L-7604
<i>General purpose:</i>	
Calendar lubricants, also used in anti-blocking applications in paper manufacturing	L-45 (50-1,000 cSt)
Minimize mar in letterpress and lithographic printing	LE-45 / LE-458HS / LE-743HS
Improve pigment dispersion	Aqueous: Silwet L-7230 / Silwet L-7220 Non-aqueous: Silwet L-7230 / Silwet L-7220 / L-42
Promote compatibility with organic resins	Silwet L-7500 / Silwet L-7220 / Silwet L-7001
Provide recoatability	Aqueous: LE-410 Non-aqueous: L-42
Facilitate flow and leveling during printing	Silwet L-7644 / Silwet L-7600 / Silwet L-7210 / Silwet L-7220 / Silwet L-7280 / Silwet L-77 / Silwet L-7608
Minimize water spotting and curl in paper printed with waterborne lithographic, flexographic and gravure inks	Silwet L-7280 / Silwet L-7608 / Silwet L-7602
Minimize linting and picking of web in lithographic printing	Silwet L-7280 / Silwet L-7608 / Silwet L-7604 / Silwet L-7220
Used in dampening solutions to increase printing efficiency	Silwet L-7280 / Silwet L-7608 / Silwet L-7200 / Silwet L-7210
Prevent paper from sticking to dryers and rollers during manufacture	LE-410 / Silwet L-7602 / Silwet L-7200 / Silwet L-7604
Impart mar and smudge-resistance	LE-410 / Silwet L-7602 / Silwet L-7200 / Silwet L-7604

DIMETHYL SILICONE FLUIDS - continued

Features - continued

Presents a desirable, pleasant feel.

Low bulk surface tension of 20 mN/m.

Low toxicity, low odor.

Above 50 cSt has negligible vapor pressure.

Benefits - continued

Provides emolliency in skin care, conditioning in hair care.

Able to wet and spread on even low-energy surfaces. Permits use as antifoams, anti-flooding agents, water repellents, coatings and automobile and furniture polishes.

Beneficial characteristics for cosmetic formulators, food processors and manufacturers of drugs and chemical specialties.

Flash point > 400°F. Safe, non-fugitive.

VISCOSITY CATEGORIES

L-45 Dimethyl Silicone Fluids are divided into three groups: low viscosity (10-20 cSt), regular viscosity (50-1,000 cSt) and high viscosity (10,000-100,000 cSt). Different viscosities are appropriate for different applications.

Low Viscosity L-45 Dimethyl Silicone Fluids (10-20 cSt)

Offer heat transfer properties and maximum compressibility. They are used principally in low-temperature baths, heat exchangers and thermostats. Their safety and ease of handling make them useful in solar heating/cooling systems. Their compressibility makes them useful in fluid springs, pressure transducers and shock absorbers.

Low viscosity L-45 fluids are soluble in ethanol and petroleum oil, as well as aliphatic and aromatic solvents.

Regular Viscosity L-45 Dimethyl Silicone Fluids (50-1,000 cSt)

Provide outstanding shear stability, excellent lubricity, low toxicity, low odor and a pleasing feel.

In industrial applications they are used primarily as mechanical lubricants or as lubricants for rubber and plastic parts. They are especially effective in plastic-to-metal lubrication. Additionally, they are used as release agents for molding rubber, glass and plastic parts, or for shell and core molds.

In printing applications they are used as release agents in the manufacture of food packaging paper and for direct contact with food where standards permit. They also are useful as calendar lubricants and in anti-blocking treatments.

In household and automotive applications, L-45 fluids are widely used in car polishes, where they impart easy rub-out, resist oxidation and give a deep gloss. They also are used in furniture polishes. Finishes can be varied from low to high gloss by blending L-45 fluids of suitable viscosities.

Other uses include protective hand creams and lotions, antifoams for non-aqueous petroleum processing systems, hydraulic fluids and pigment flotation in paints.

VISCOSITY CATEGORIES - continued

High Viscosity L-45 Dimethyl Silicone Fluids (10,000-100,000 cSt)

Primarily used as release agents. In the rubber industry, they are used as release agents for molding automotive and truck tires and to formulate bandply lubricants. They provide excellent mold release in the manufacture of plastic and rubber parts.

Additionally, they are used as defoamers in large-scale industrial applications like delayed cokers and mining operations. They are also used in coatings to provide a "hammertone" effect.

Volatile Silicone Fluids VS-7207, VS-7158, and VS-7349

Volatile silicone fluids combine volatility with low heat of vaporization, lubricity, low surface tension, low viscosity, solubility in a wide variety of solvents, and are water-white and crystal clear. These properties contribute to emolliency, lubricity, wetting and flow, and reduced stainability in formulations.

Volatile silicone fluids are used in a wide range of consumer and industrial products such as personal care products, household and car care products, specialty wax preparations, coatings and chemical specialty formulations including glass cleaners, penetrating oils, surface preparations and specialty cleaners.

They are especially desirable in antiperspirant and other skin care formulations because of their low heat of vaporization.



General Product Information

Silwet® Surfactants are polyalkylene oxide-modified polydimethylsiloxanes. Chemically unique, they consist of a siloxane backbone with organic polyalkylene oxide pendants forming chemical structures whose variations provide a wide range of useful performance characteristics not possible with conventional organic surfactants or unmodified silicones. Silwet surfactants

are nonionic and function in both aqueous and non-aqueous

systems. Highly efficient, economical and concentrated, they are added at levels as low as 0.01 percent.

Features	Benefits
Low surface tension, high wetting.	<p>Allow effective wetting on virtually any surface. For example, Silwet L-77® surfactant is one of the few surfactants capable of wetting PTFE (Teflon®) surfaces.</p> <p>Very low concentrations of Silwet surfactants can reduce the surface tension of water from 72 to as low as 20 mN/m. The superior substrate wetting improves penetration of many substrates. The flow and leveling of coatings also are markedly improved by adding Silwet surfactants.</p>
Low interfacial tension, superior dispersing, emulsifying.	<p>Can be used alone or with conventional surfactants in aqueous or non-aqueous systems. Excellent secondary emulsifiers in conjunction with an organic emulsifier. Silwet surfactants are nonionic and therefore are compatible when used with amphoteric, anionic, cationic and other nonionic surfactants.</p>
Excellent lubricity.	<p>Orient at organic surfaces in a manner favorable for lubrication. They work very well with polymers, plastics and rubber. They also improve the effectiveness of fine grinding. Their lubricating properties add emolliency and conditioning to personal care products and mar resistance to coatings.</p>
Sheen, gloss enhancement.	<p>Impart residual sheen, or gloss, to surfaces. This characteristic makes them valuable in hair care and other personal care applications. When added to coating formulations, Silwet surfactants provide surface gloss.</p>